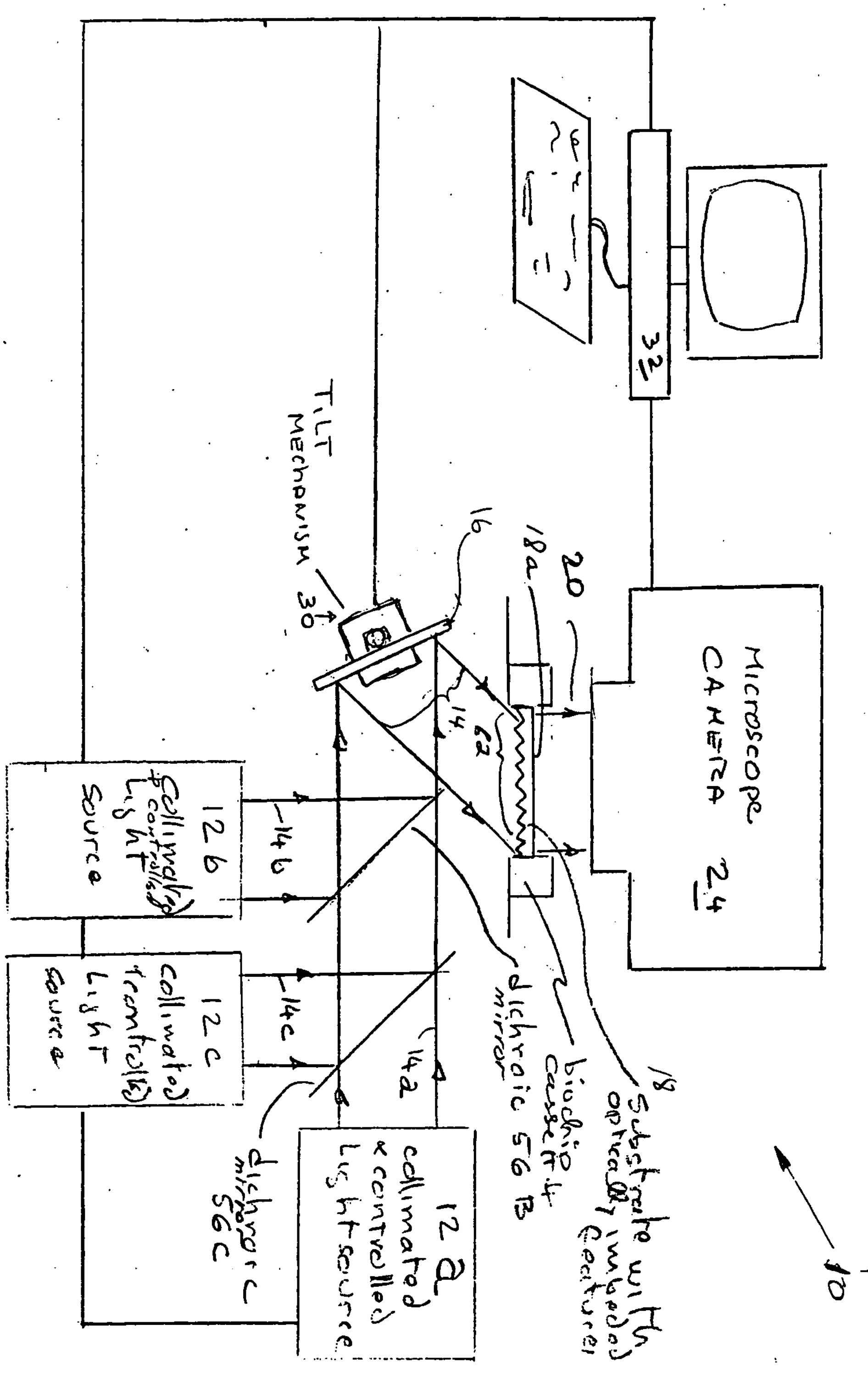

Microscope Camera 24
Tilt Mechanism 30
16
18a
20
32
14
62
12b
14b
12c
14c
14a
12a collimated & controlled Light source
dichroic mirror 56 C
dichroic mirror
dichroic 56 B
biochip cassette
18
Substrate with optically imaged features
10

FIG 1

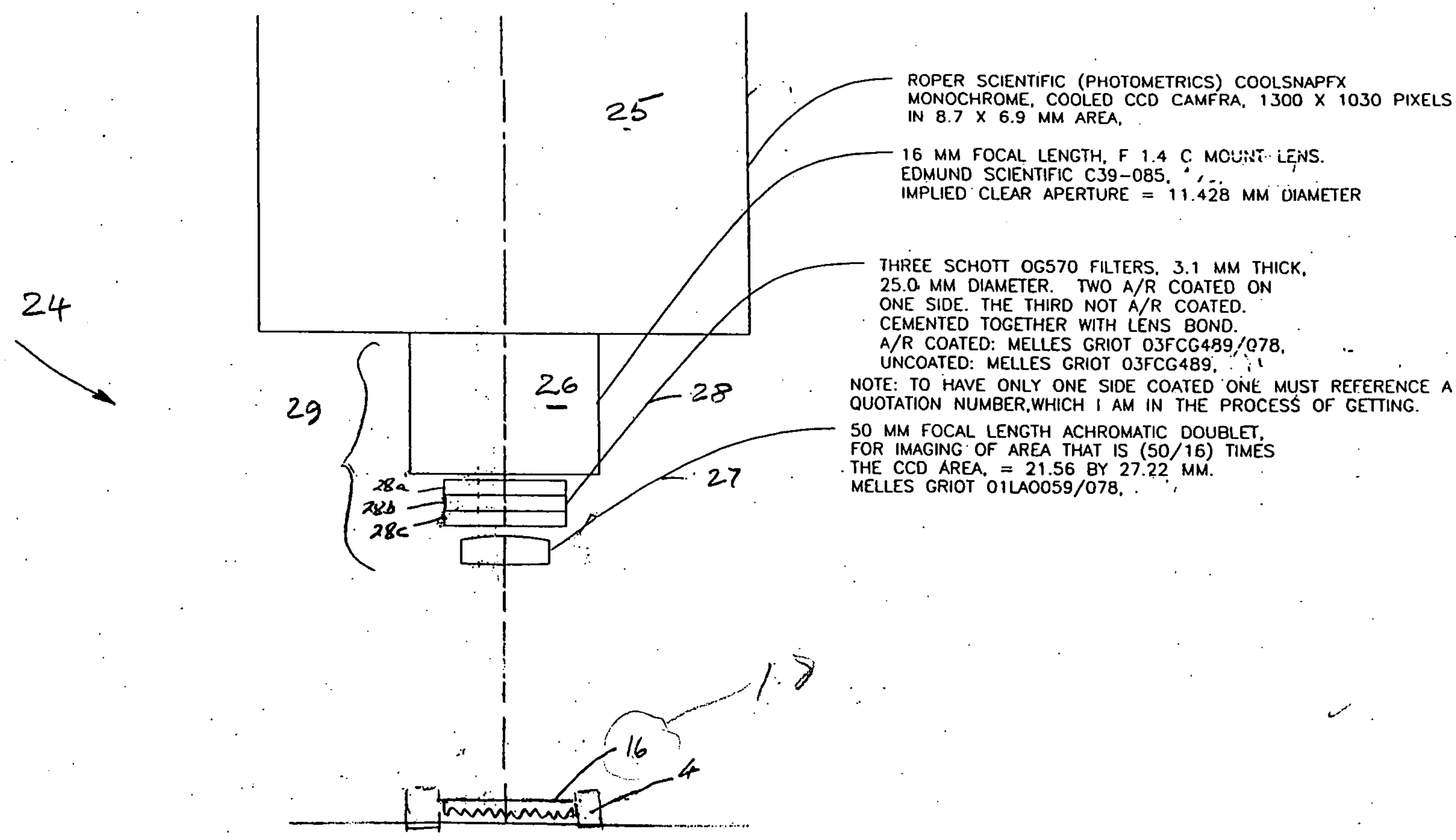

24
25
26
29
28
27
28a
28b
28c
16
4
ROPER SCIENTIFIC (PHOTOMETRICS) COOLSNAPFX MONOCHROME, COOLED CCD CAMFRA, 1300 X 1030 PIXELS IN 8.7 X 6.9 MM AREA,
16 MM FOCAL LENGTH, F 1.4 C MOUNT LENS. EDMUND SCIENTIFIC C39-085,
IMPLIED CLEAR APERTURE = 11.428 MM DIAMETER
THREE SCHOTT OG570 FILTERS, 3.1 MM THICK, 25.0 MM DIAMETER. TWO A/R COATED ON ONE SIDE. THE THIRD NOT A/R COATED. CEMENTED TOGETHER WITH LENS BOND.
A/R COATED: MELLES GRIOT 03FCG489/078,
UNCOATED: MELLES GRIOT 03FCG489,
NOTE: TO HAVE ONLY ONE SIDE COATED ONE MUST REFERENCE A QUOTATION NUMBER,WHICH I AM IN THE PROCESS OF GETTING.
50 MM FOCAL LENGTH ACHROMATIC DOUBLET, FOR IMAGING OF AREA THAT IS (50/16) TIMES THE CCD AREA, = 21.56 BY 27.22 MM.
MELLES GRIOT 01LA0059/078,

FIG 1A

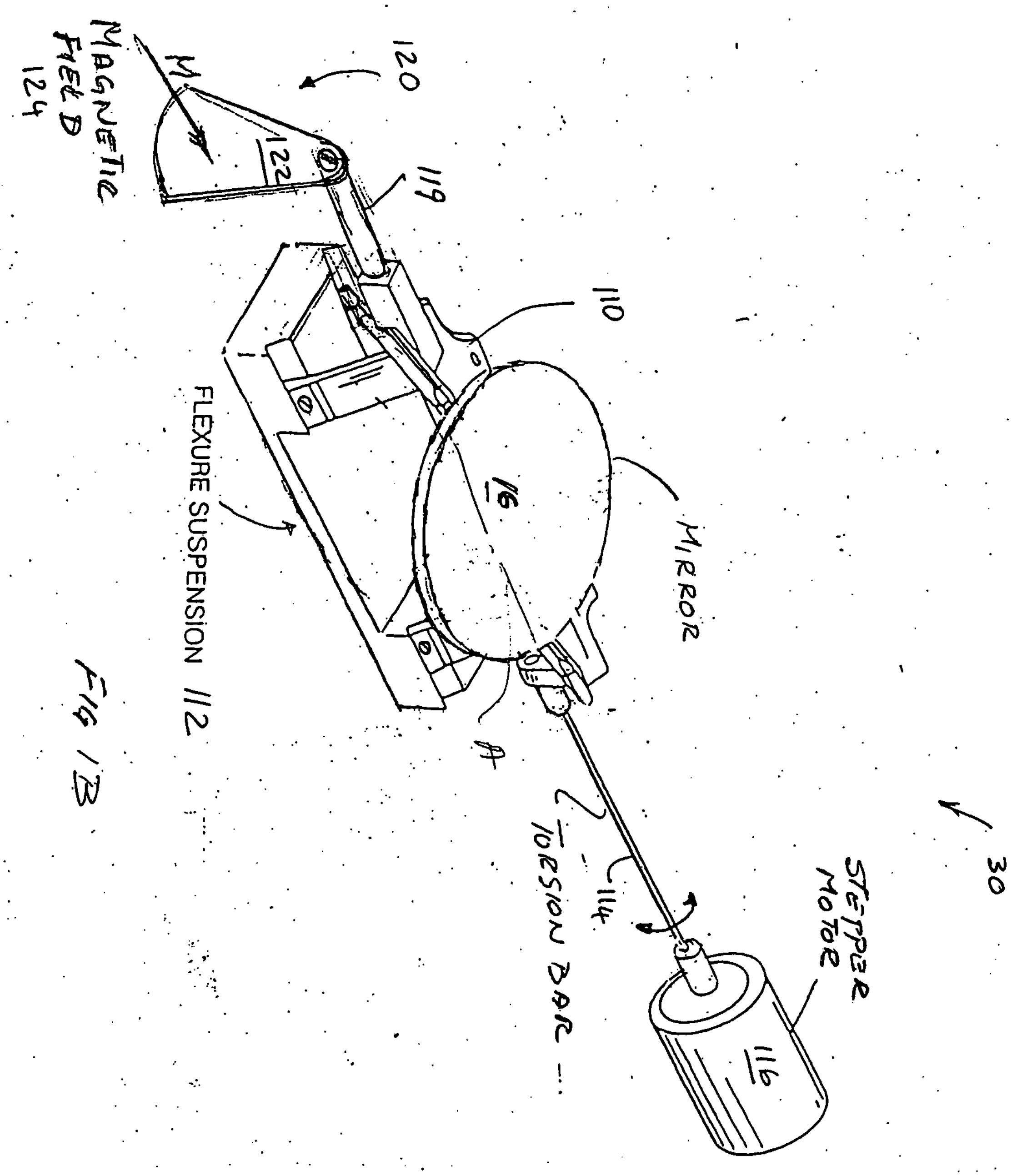

MAGNETIC FIELD 124
M
120
122
119
110
16
MIRROR
FLEXURE SUSPENSION 112
A
TORSION BAR 114
STEPPER MOTOR
116
30

FIG 1B

Fig. 1D

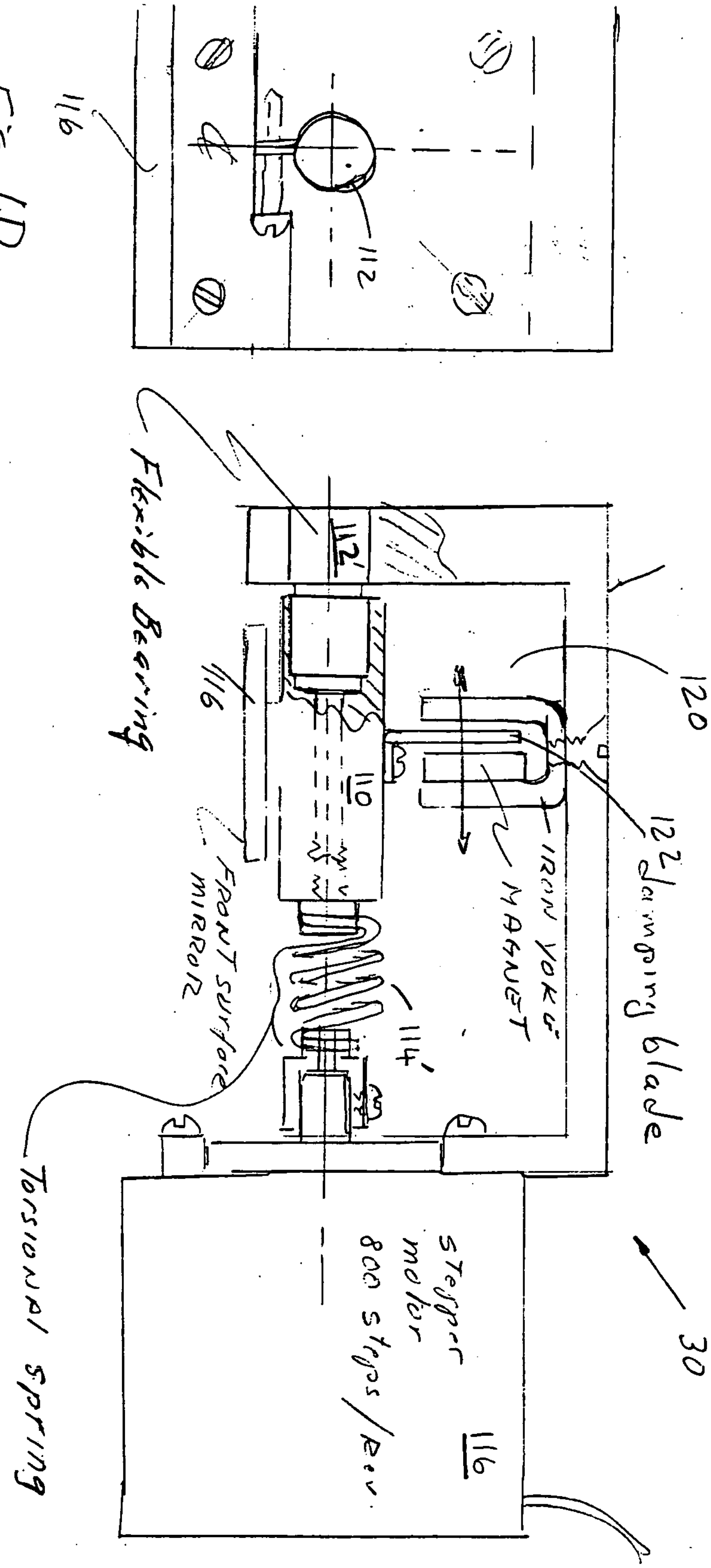

116
112
Flexible Bearing
112'
116
110
120
122
Damping blade
IRON YOKE
MAGNET
FRONT surface
MIRROR
114'
Torsional spring
stepper
motor
800 steps/Rev.
116
30

Fig. 1C

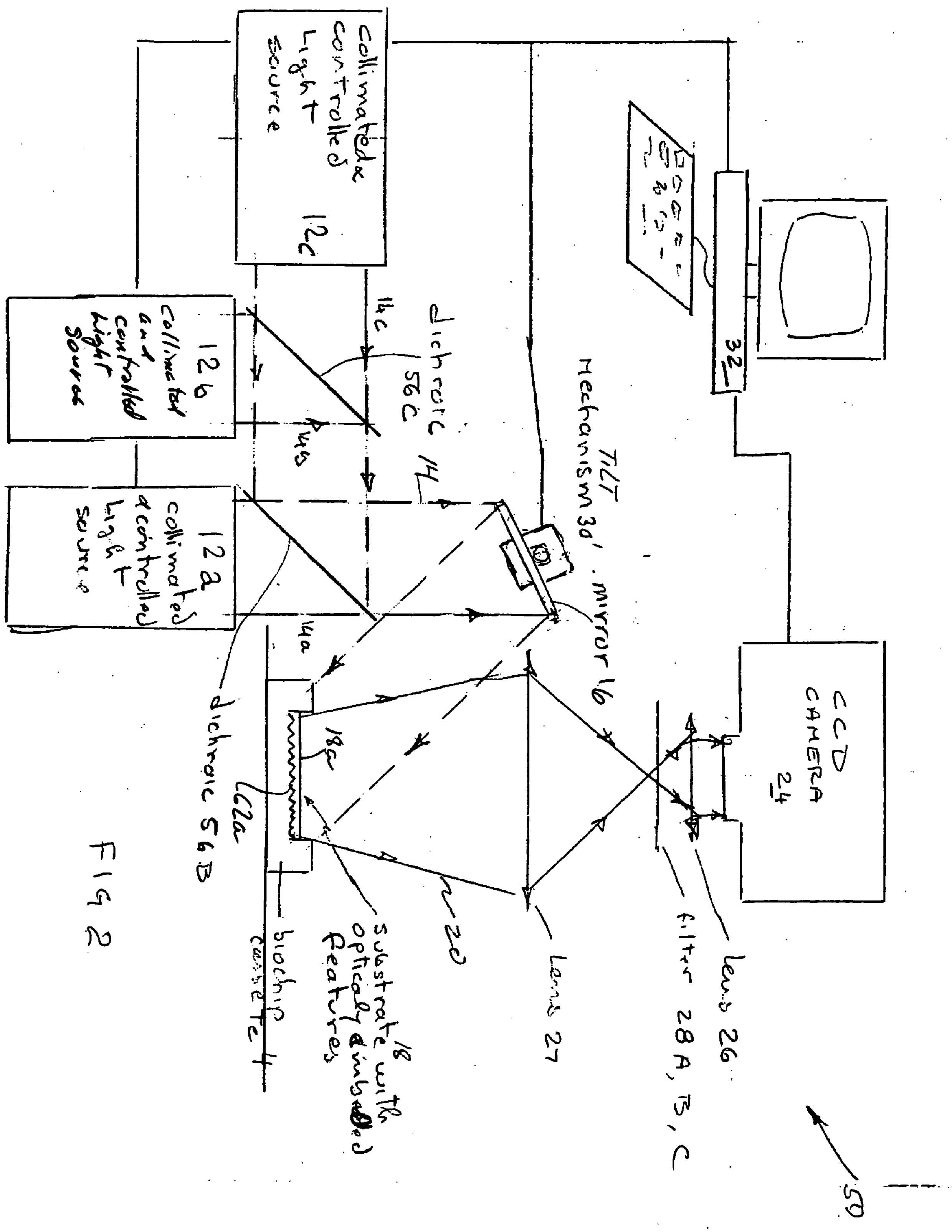

collimated & controlled light source 12c
12b collimated and controlled light source
12a collimated & controlled light source
dichroic 56C
dichroic 14
dichroic 56B
TILT mechanism 30'
mirror 16
CCD CAMERA 24
lens 26
filter 28A, B, C
lens 27
20
substrate with optically discernable features 18
biochip cassette
22a
32
50

FIG 2

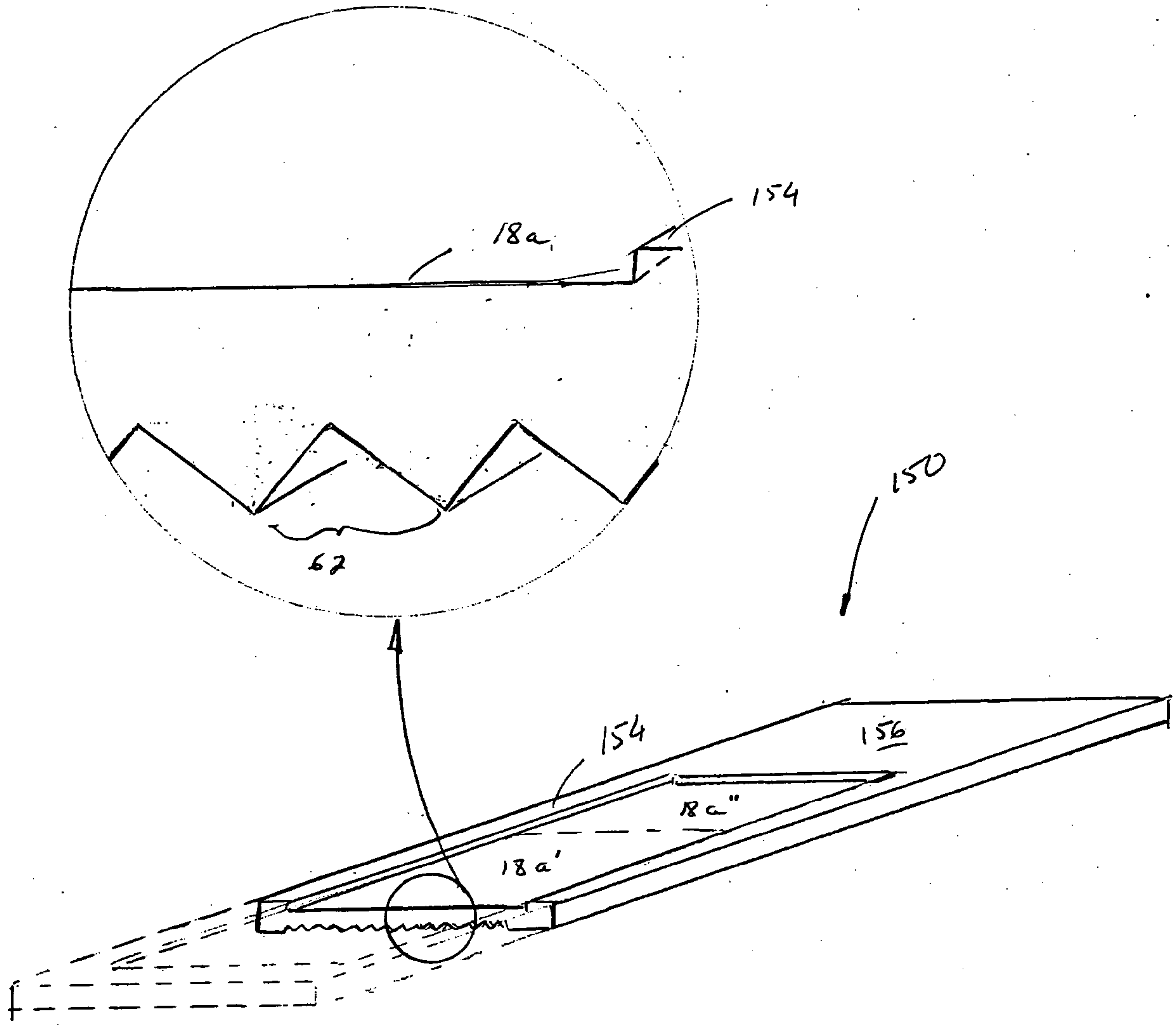


FIG 3

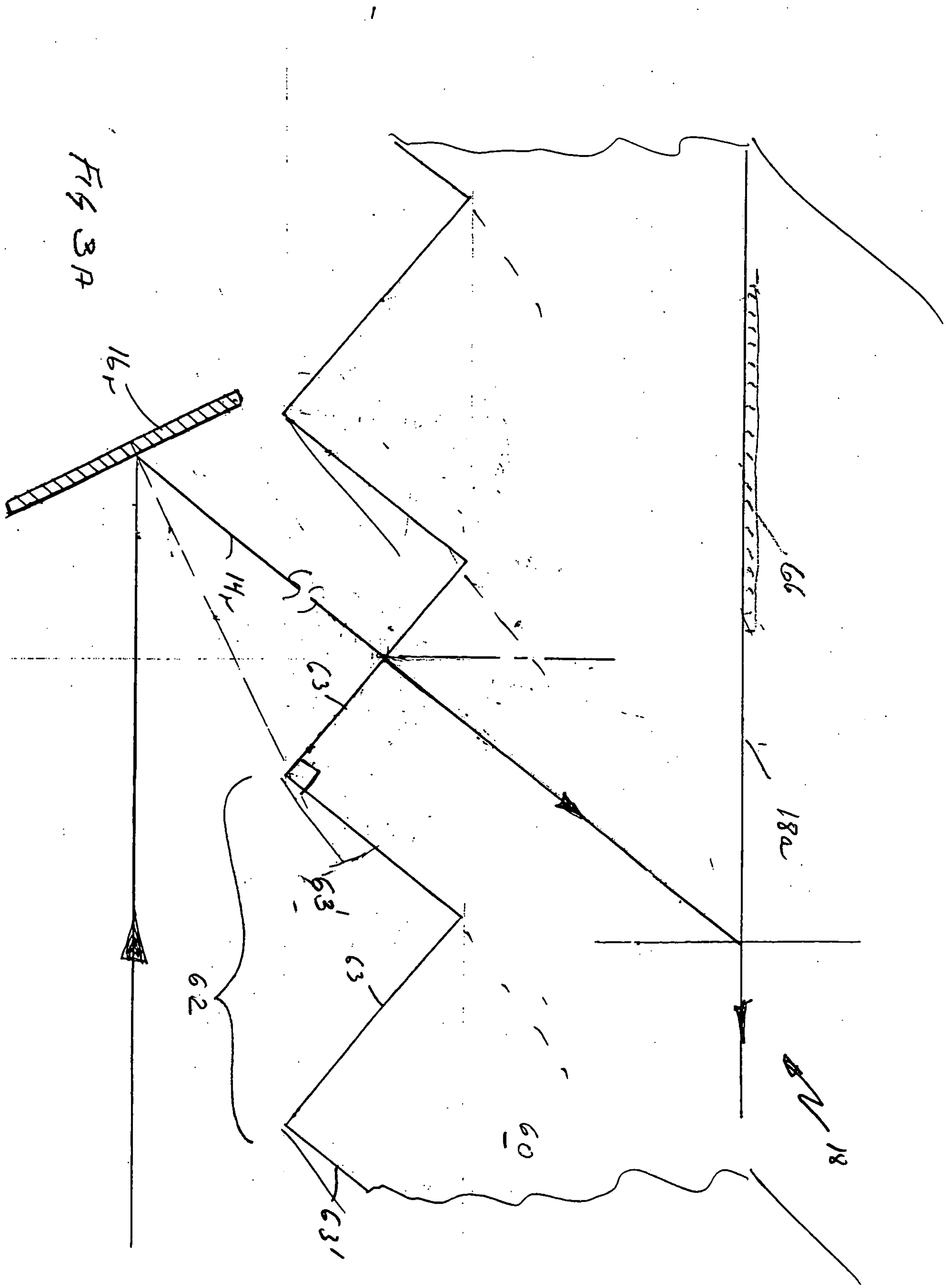
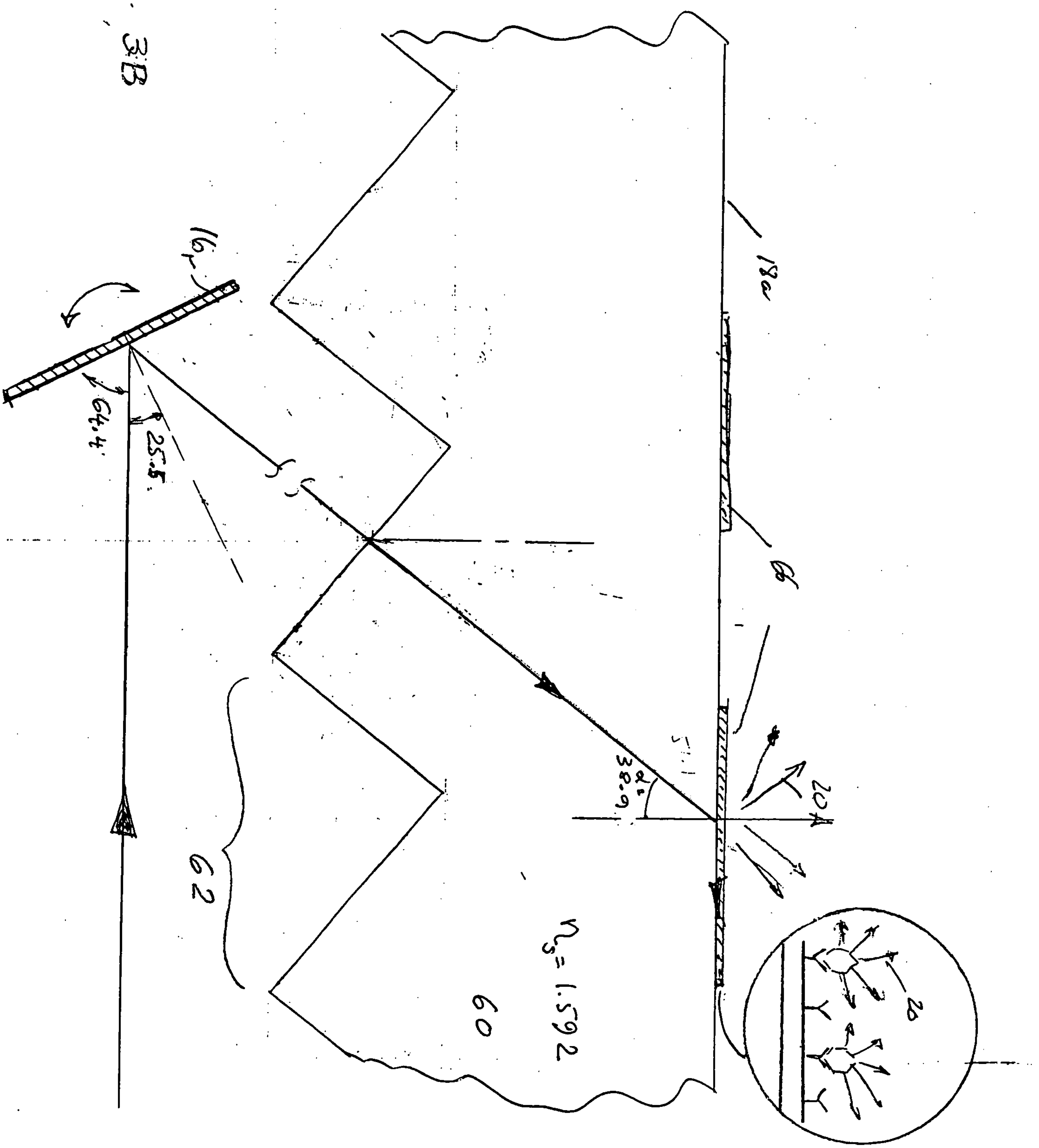


Fig 3A
16
14
63
66
18a
63'
63
62
60
63'
18

FIG. 3B



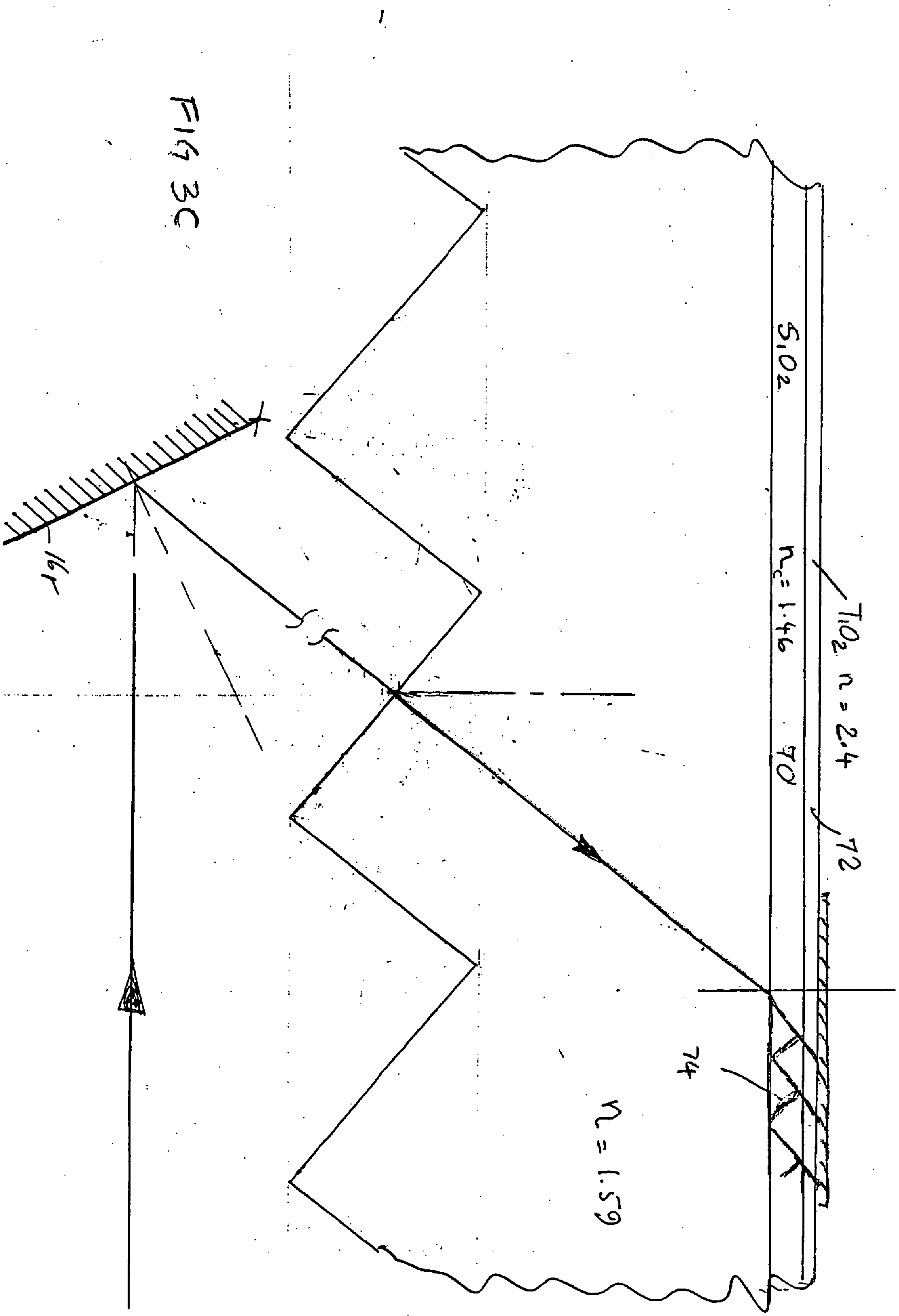


FIG 3C

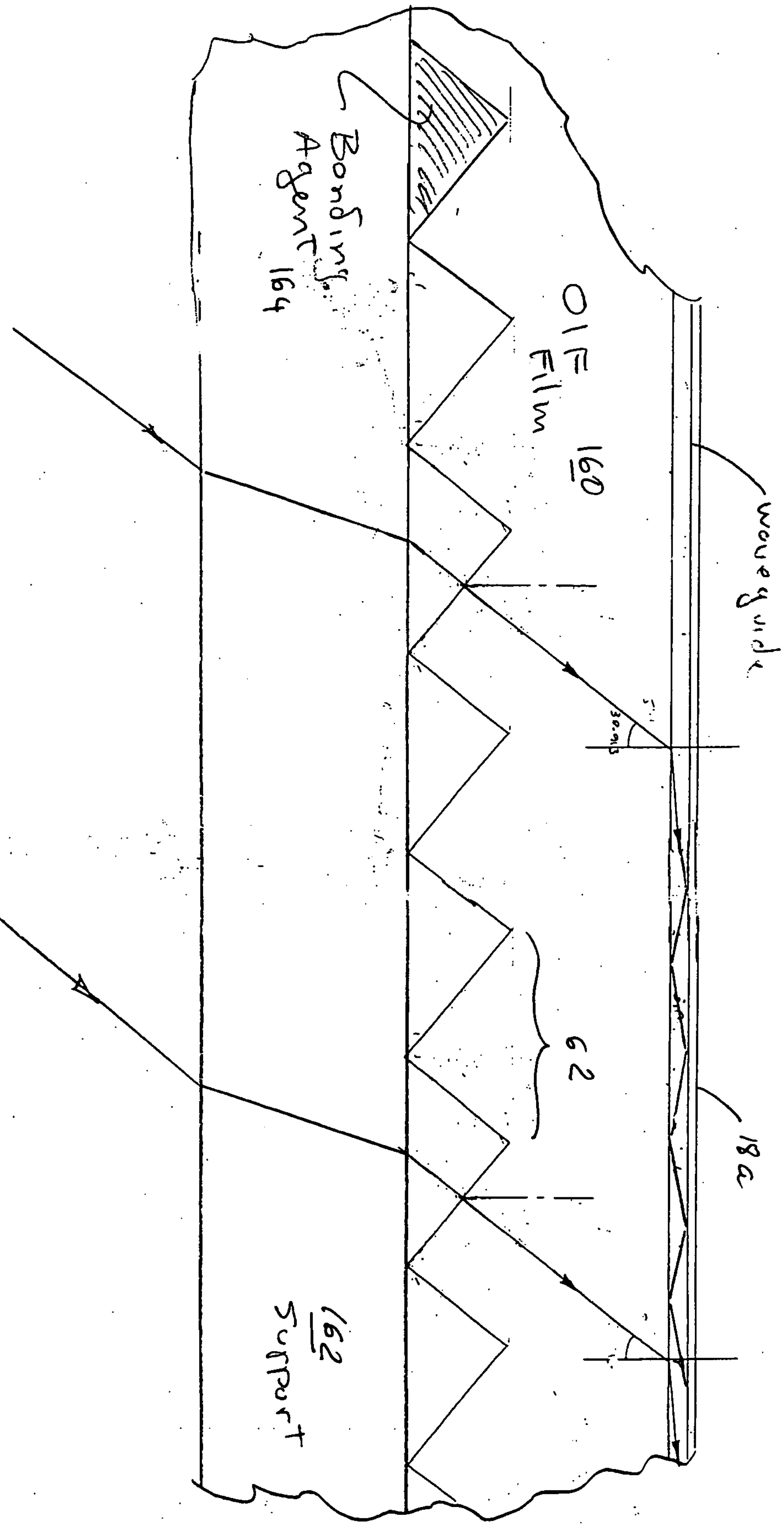
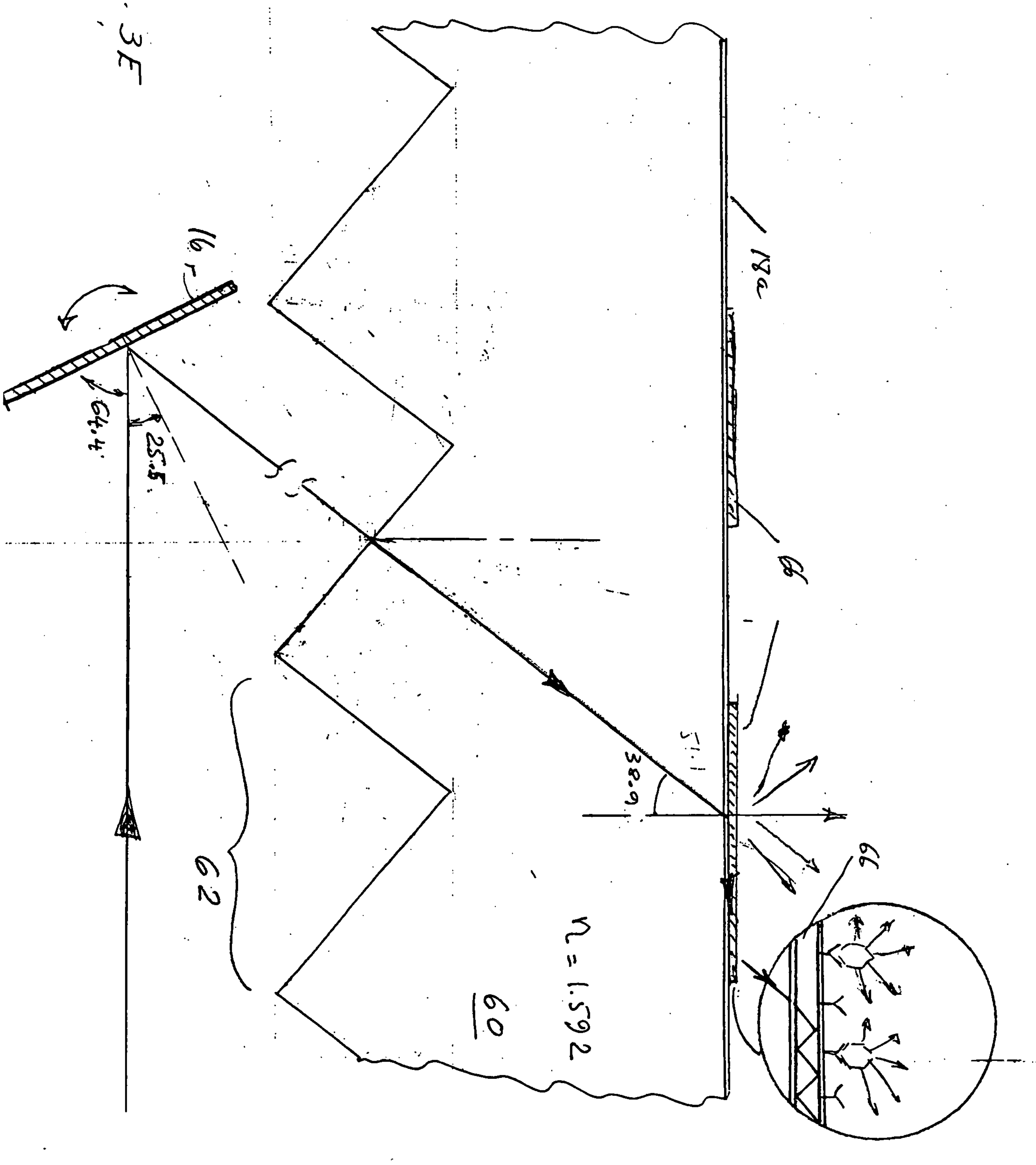


FIG. 3D

FIG. 3E



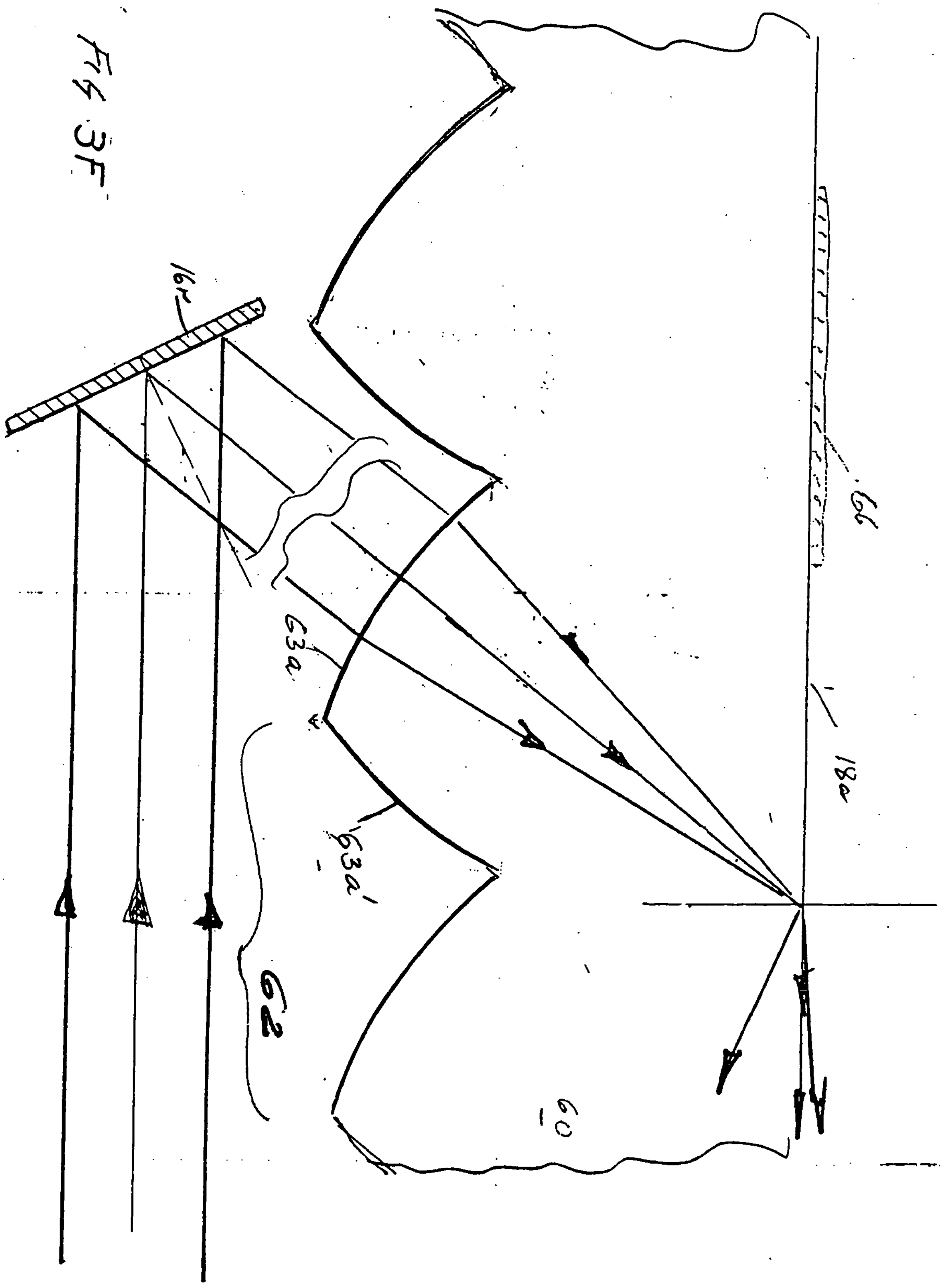
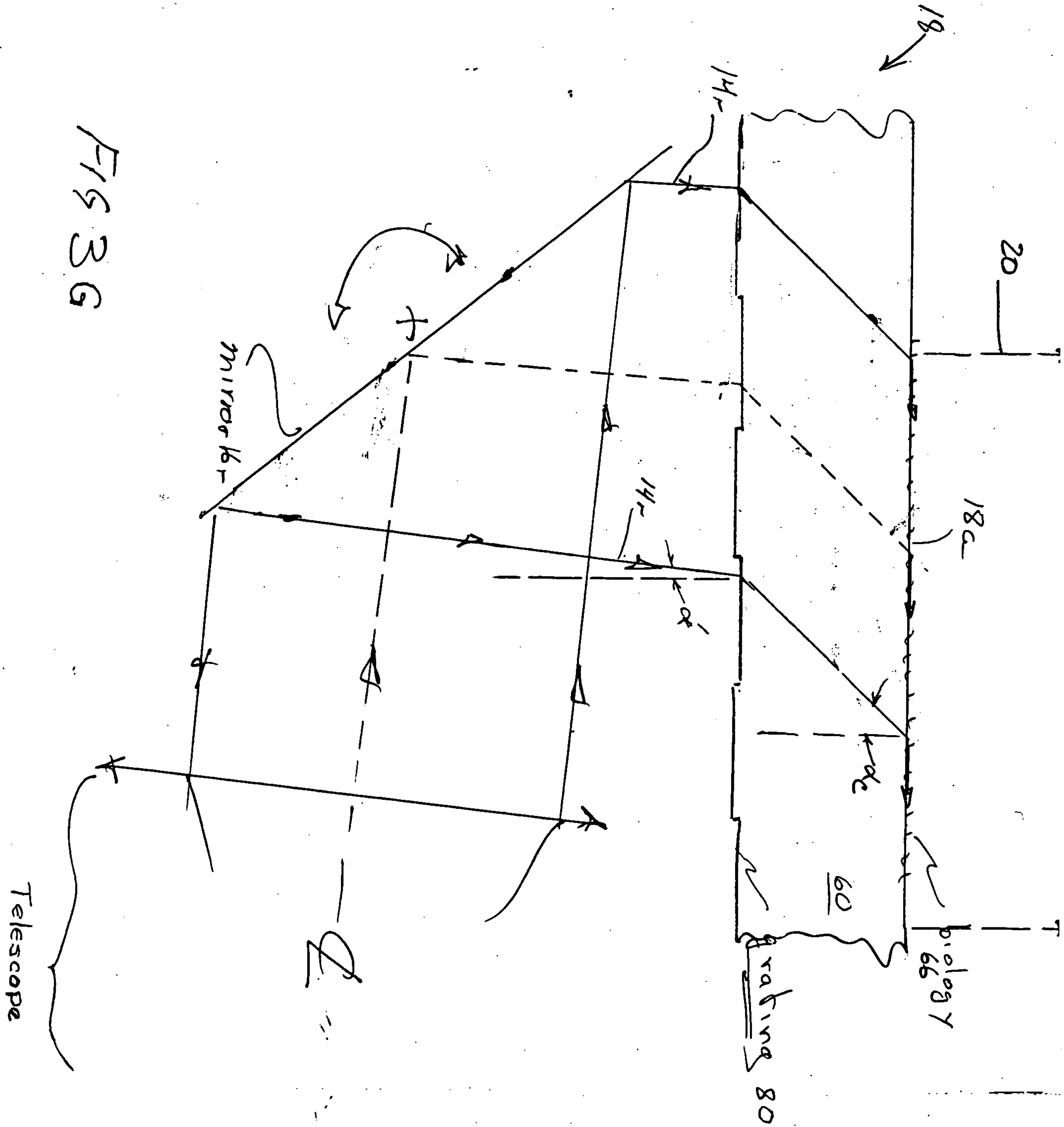


Fig 3F

FIG 3G


18
14r
20
mirror 16r
14r
α
18a
α
60
biology 66
grating 80
Z
Telescope

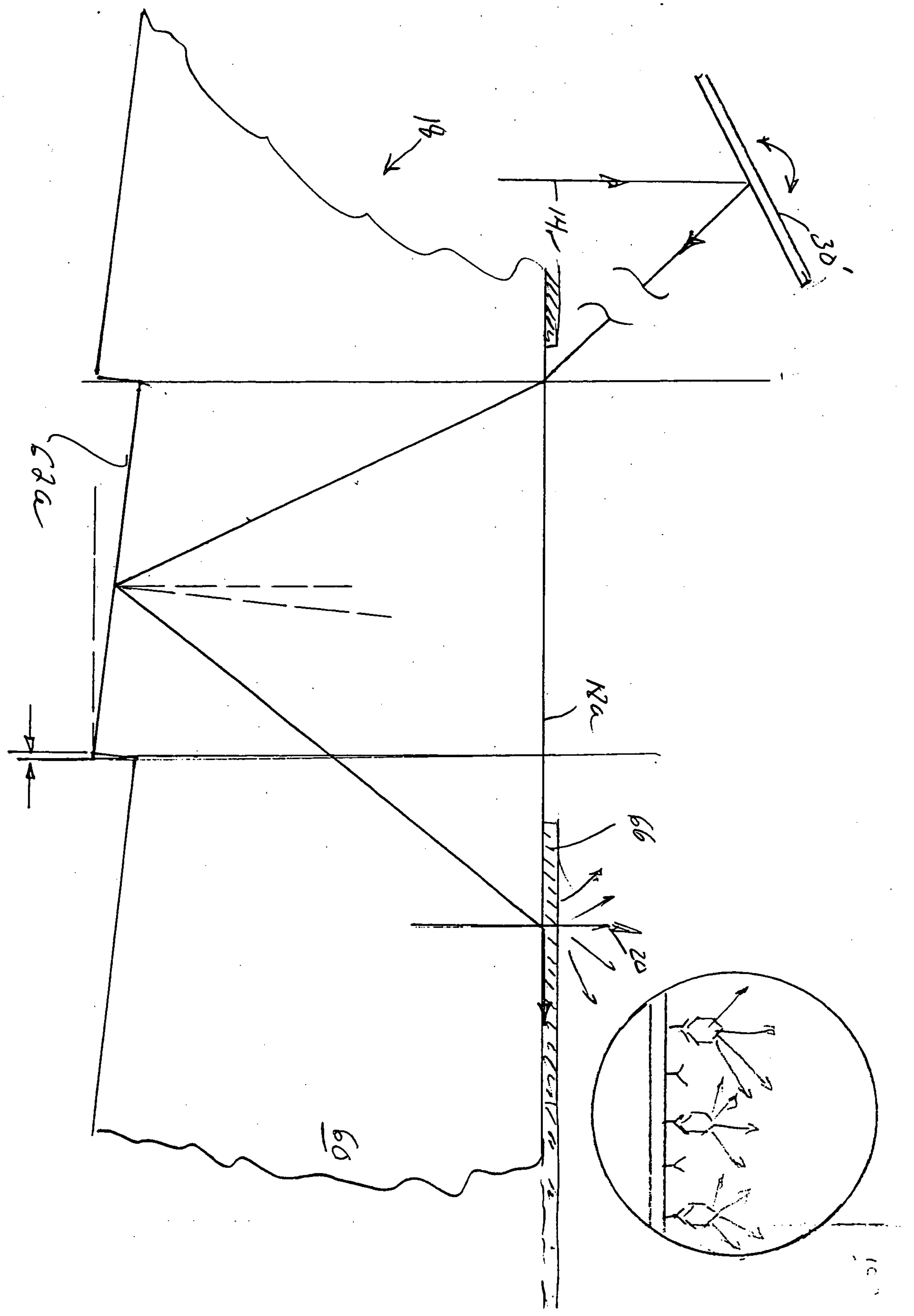


FIG. 4

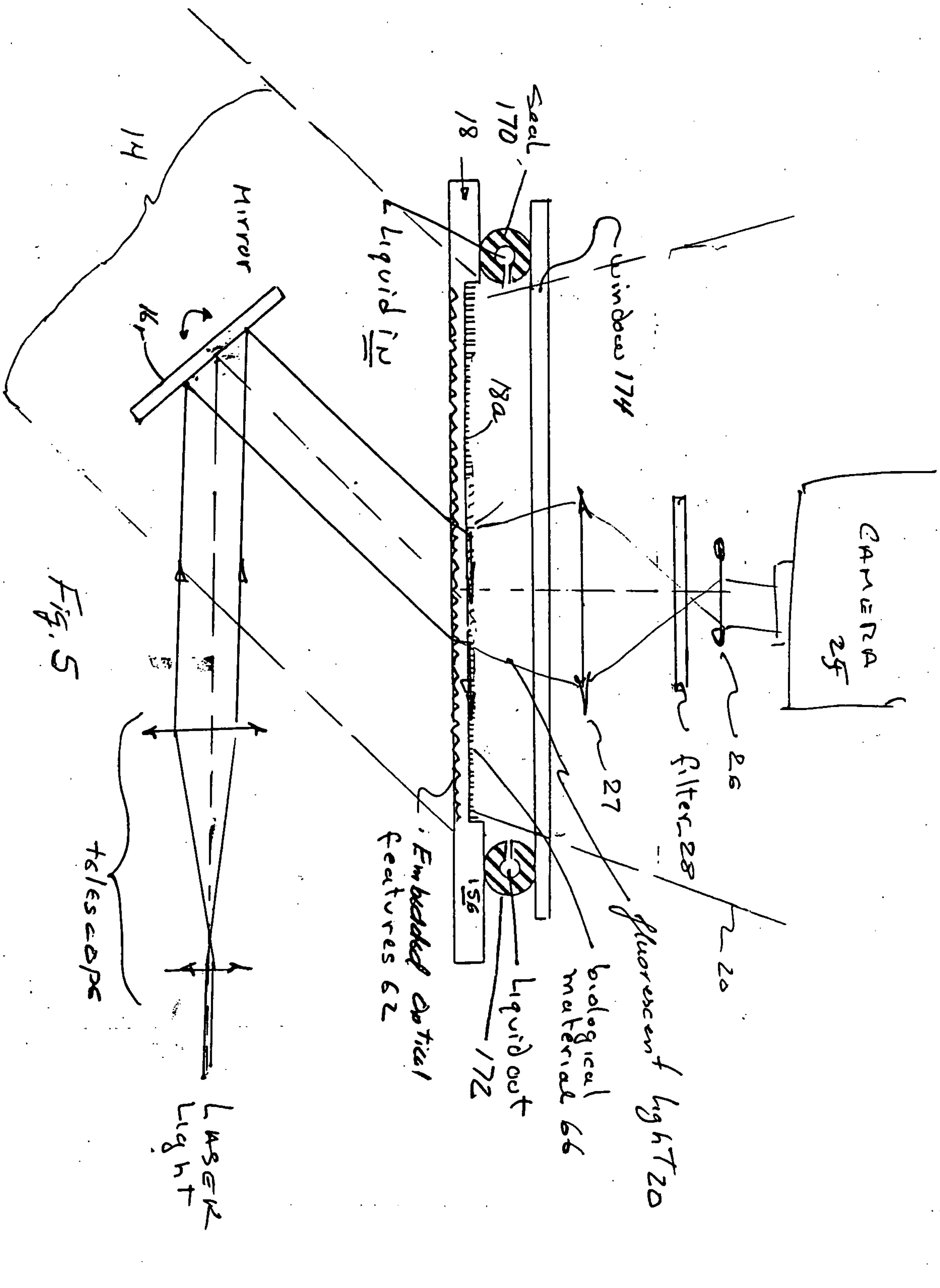

Seal 170
18
14
Mirror
16
Liquid in
Window 174
18a
CAMERA 25
26
filter 28
27
20
fluorescent light 20
biological material 66
Liquid out 172
156
Embedded Optical features 62
telescope
LASER Light

Fig. 5

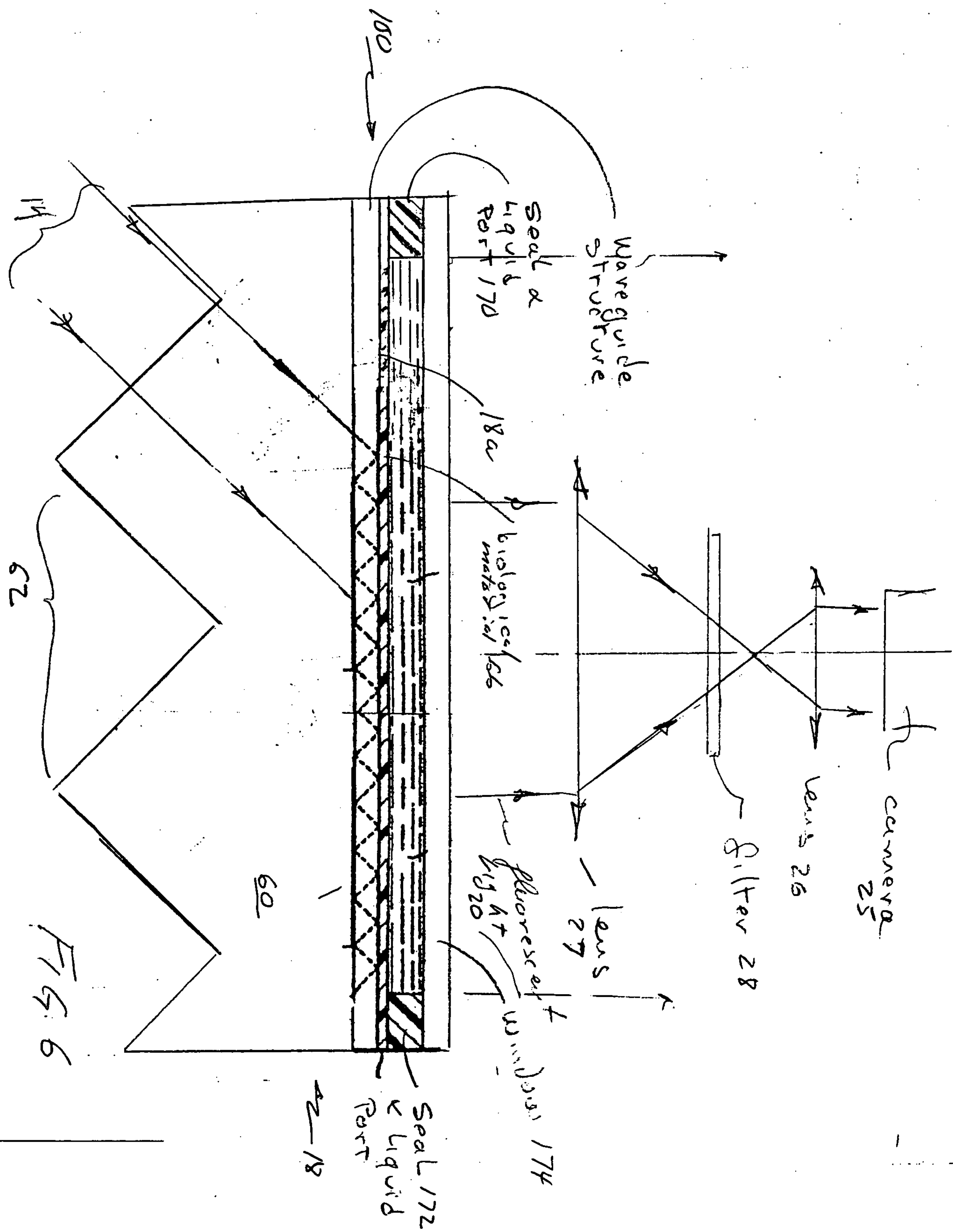

100
Waveguide Structure
Seal & Liquid Port 170
14
18a
biological material 66
62
60
fluorescent light 20
window 174
Seal 172 & Liquid Port
18
lens 27
filter 28
lens 26
camera 25

FIG. 6

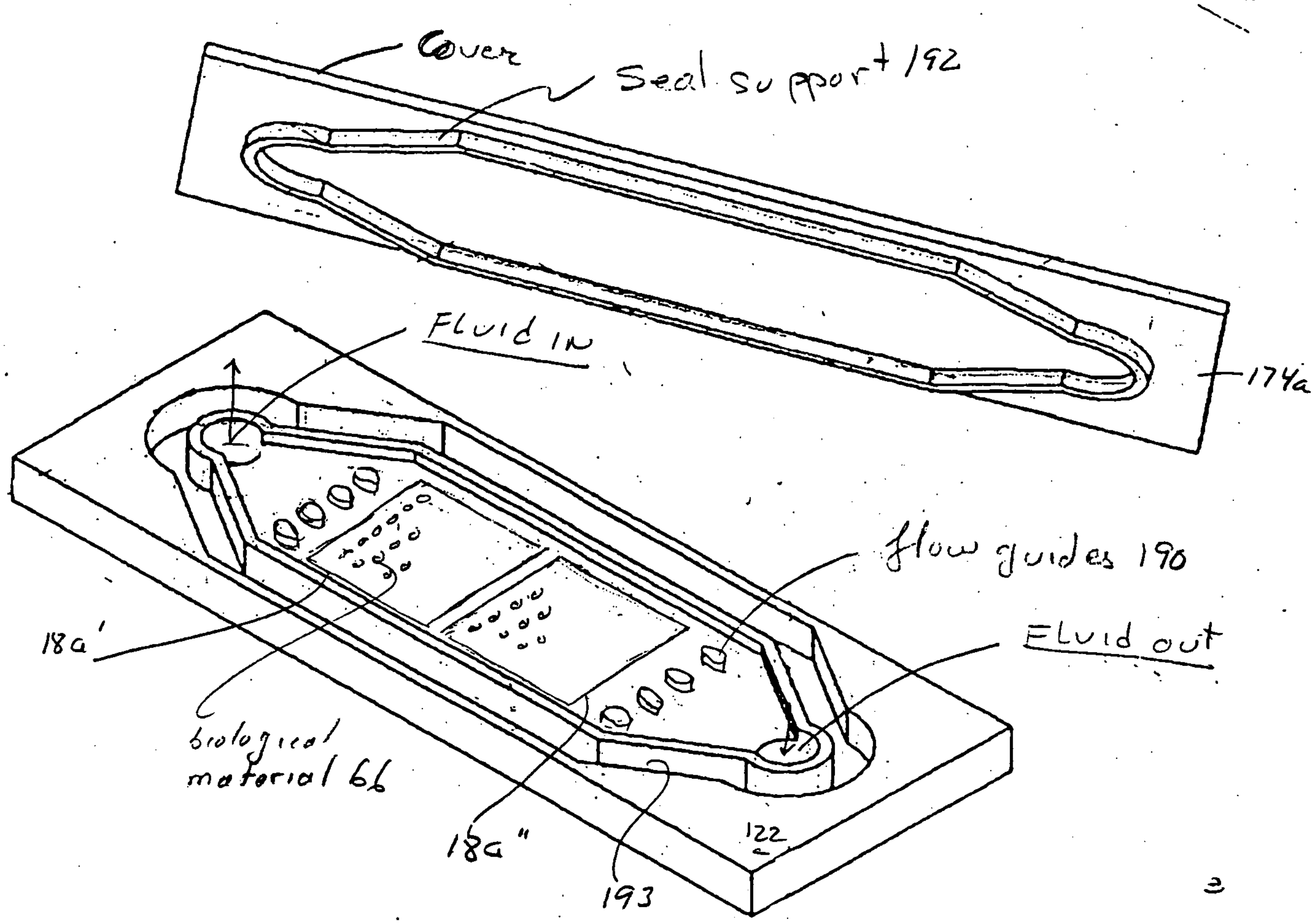

Cover
Seal support 192
174a
Fluid in
flow guides 190
Fluid out
18a'
biological
material 66
18a"
193
122

FIG 6A

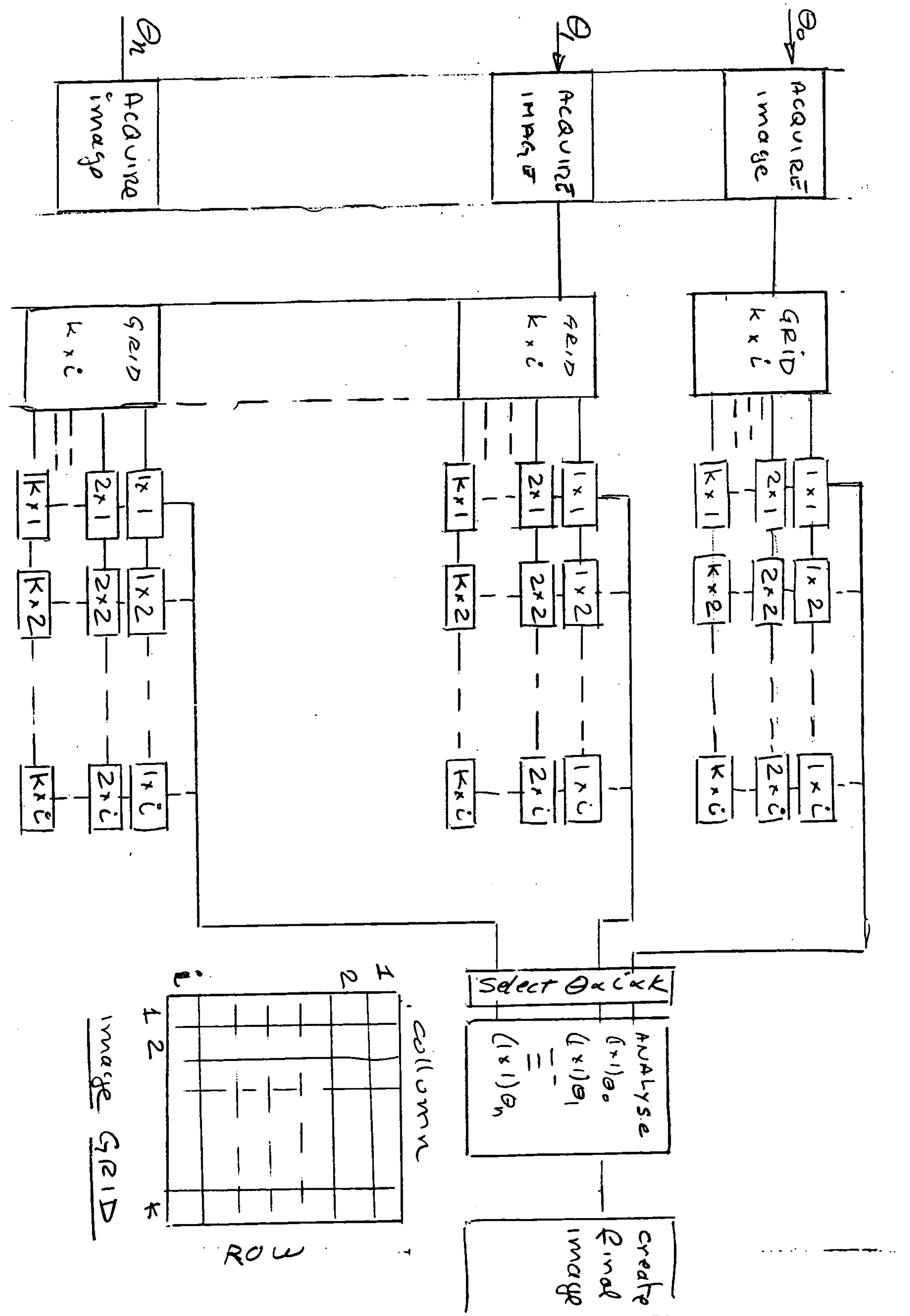


FIG 7
Image Analysis Flow Diagram

Set a most probable angle of incidence. θ_0
Acquire an image
Store image 0
Grid image – ixk grids,
each unit is analyzed and defined by a number

Increment angle θ_1
Acquire an image
Store image 1
Grid image – ixk grids,
each unit is analyzed and defined by a number

Increment angle θ_2
Acquire an image
Store image 2
Grid image – ixk grids,
each unit is analyzed and defined by a number

....

Increment angle θ_n
Acquire an image
Store image n
Grid image – ixk grids,
each unit is analyzed and defined by a number

Analyze grid unit 1x1 from angle θ_0 to angle θ_n and according to a chosen algorithm, select image of a grid unit for storage in Final Frame as Grid unit 1x1

Analyze grid unit 1x2 from angle θ_0 to angle θ_n and according to a chosen algorithm, select image of a grid unit for storage in Final Frame as Grid unit 1x2

To Fig 7b

....

Fig 7a

from Fig 7a

Analyze grid unit 1xi from angle θ_0 to angle θ_n and according to a chosen algorithm, select image of a grid unit for storage in Final Frame as Grid unit 1xi

....

Analyze grid unit 2x1 from angle θ_0 to angle θ_n and according to a chosen algorithm, select image of a grid unit for storage in Final Frame as Grid unit 2x1

....

Analyze grid unit 2x2 from angle θ_0 to angle θ_n and according to a chosen algorithm, select image of a grid unit for storage in Final Frame as Grid unit 2x2

....

....

Analyze grid unit 2xi from angle θ_0 to angle θ_n and according to a chosen algorithm, select image of a grid unit for storage in Final Frame as Grid unit 2xi

....

....

....

Analyze grid unit kx1 from angle θ_0 to angle θ_n and according to a chosen algorithm, select image of a grid unit for storage in Final Frame as Grid unit kx1

Analyze grid unit kx2 from angle θ_0 to angle θ_n and according to a chosen algorithm, select image of a grid unit for storage in Final Frame as Grid unit kx2

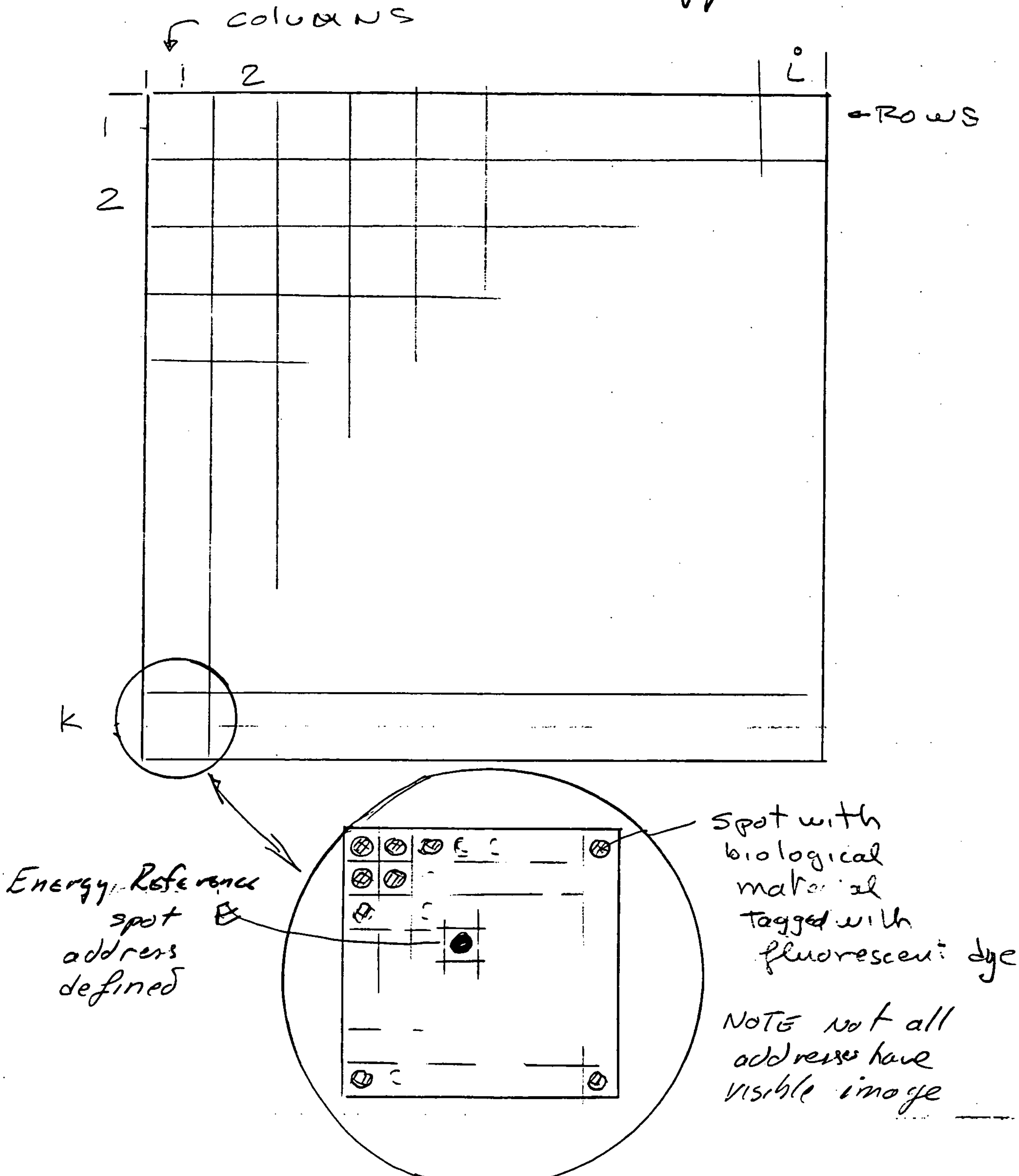
....

Analyze grid unit kxi from angle θ_0 to angle θ_n and according to a chosen algorithm, select image of a grid unit for storage in Final Frame as Grid unit kxi

Final Frame Quilt of selected Regions Complete

Fig 7b

FIG 8 of spotted array
with GRID & SUB GRID
& Energy Reference



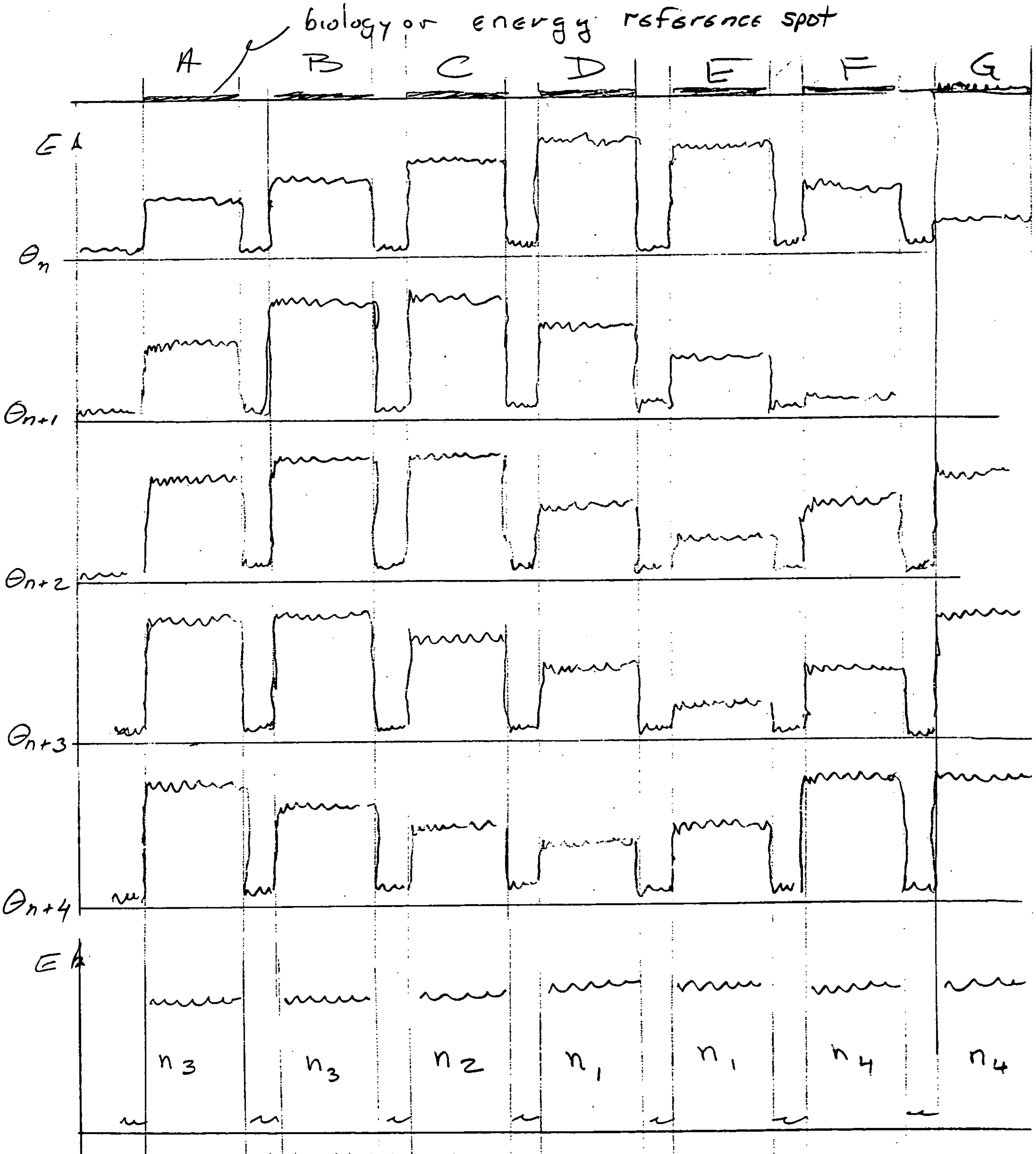


FIG 9 Selection of Region of Max signal as angle Θ_n changes to Θ_{n+4}

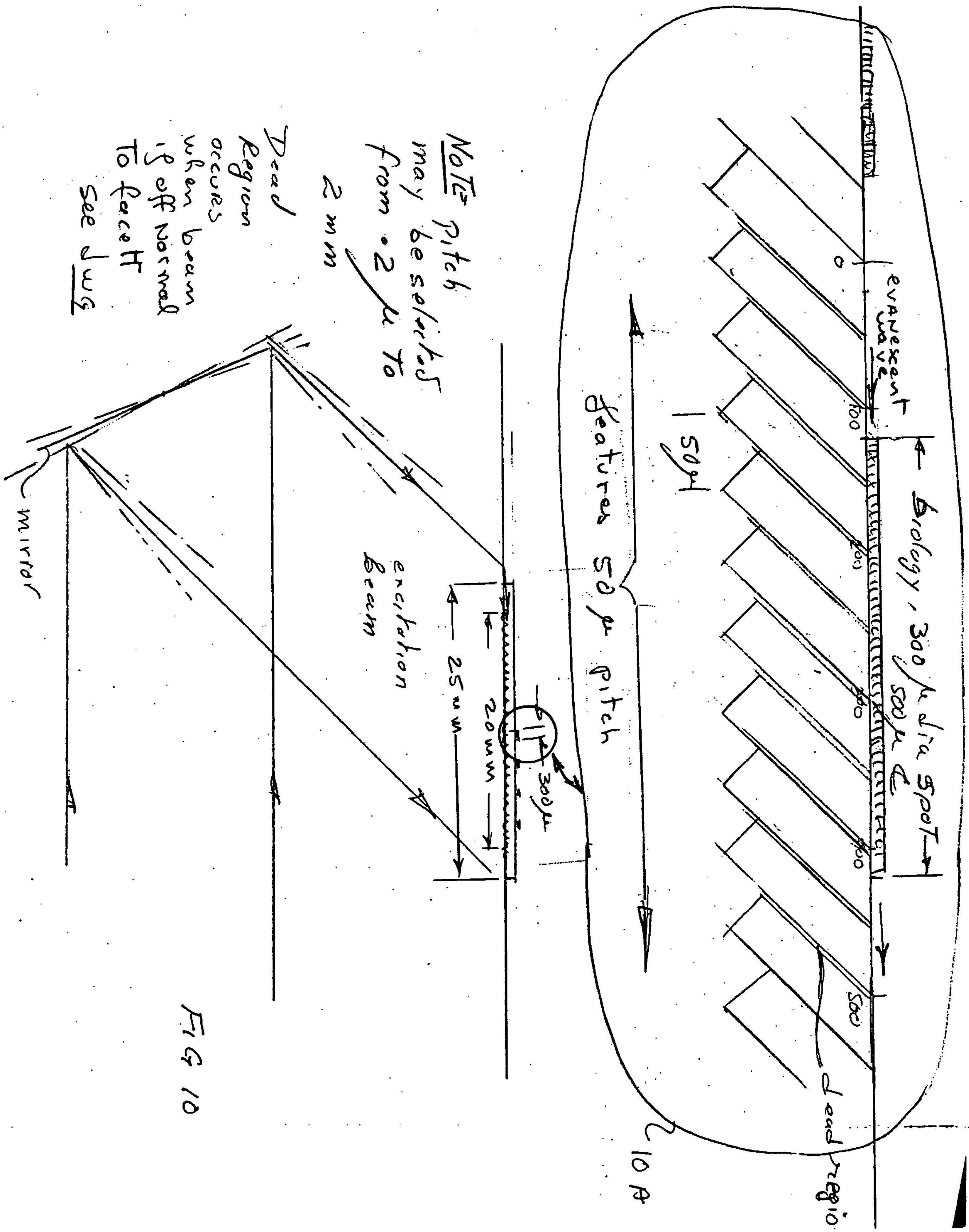

evanescent wave
biology, 300 μ dia spot
500 μ ₵
0
100
200
300
400
500
dead region
150 μ
features 50 μ pitch
10A
excitation beam
25 mm
20 mm
300 μ
mirror
Note pitch may be selected from .2 μ to 2 mm
Dead Region occurs when beam is off Normal to facett
See JWG

FIG 10

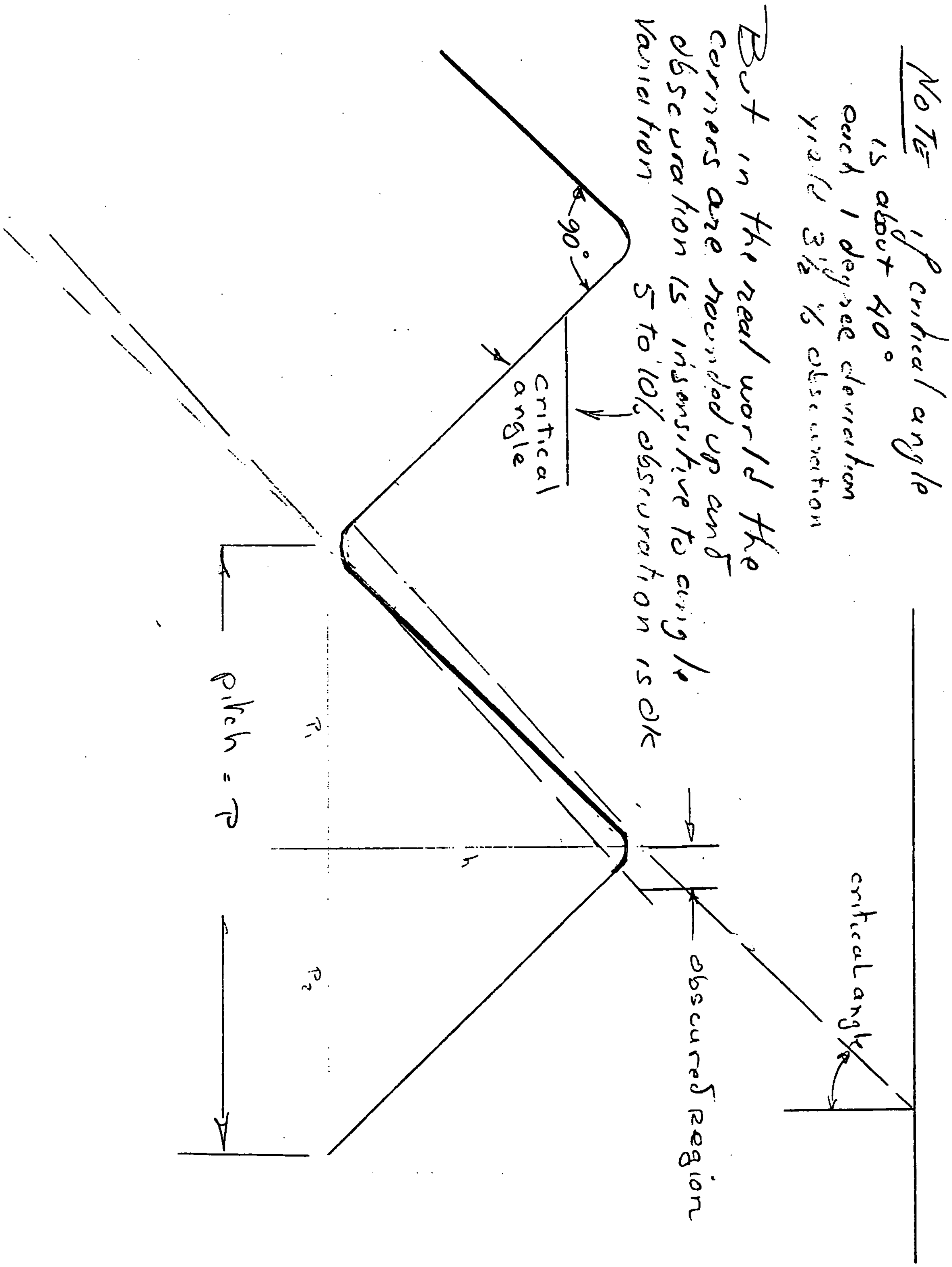

NoTE if critical angle is about 40°
each 1 degree deviation yield 3½ % obscuration
But in the real world the corners are rounded up and obscuration is insensitive to angle variation
5 to 10% obscuration is ok
90°
critical angle
pitch = P
critical angle
obscured region

FIG 10B